

Notice of Allowability

Application No.

10/509,230

Examiner

Nikita Wells

Applicant(s)

OMORI ET AL.

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Application filed 24 September 2004.
2. ☒ The allowed claim(s) is/are 1-26.
3. ☒ The drawings filed on 24 September 2004 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 24 September 2004
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Nikita Wells
Primary Examiner
Art Unit: 2881

Allowable Subject Matter

1. Claims 1-26 are allowed.
2. The following is an examiner's statement of reasons for allowance:

With respect to the independent claims 1, 20, and 24, prior art fails to disclose or make obvious, a mask pattern correction method and a mask production method, including a step of creating first position data indicating positions of a plurality of marks when supporting a first thin film having said plurality of marks in a state where a first surface thereof directs upward; a step of creating second position data indicating positions of said marks when supporting said first thin film in a state where a second surface thereof directs upward; a step of obtaining a transfer function for converting said first position data to said second position data; and a step of correcting a mask pattern as a shape of an exposure beam transmission portion to be formed on a second thin film by using an inverse function of said transfer function.

With respect to the independent claims 16 and 26, prior art fails to disclose or make obvious a mask production method of a semiconductor device, including a step of irradiating an exposure beam to an exposure object arranged to face to a first surface of a mask from the second surface side of said mask and exposing a mask pattern formed on said mask to said exposure object, wherein: said mask pattern is a pattern corrected by using an inverse function of a predetermined transfer function; said transfer function is a function for converting first data to second position data; said first position data indicates positions of a plurality of marks when supporting a transfer function determining thin film having said marks in a state where the first surface thereof directs upward; and said second position data indicates positions of said marks.

Art Unit: 2881

when supporting said transfer function determining thin film in a state where the second surface thereof directs upward.

The dependent claims 2-15, 17-19, 21-23, and 25 are allowable by virtue of their dependence upon the independent claims 1, 16, 20, and 24, respectively.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. S. Omori (2005/0014076 A1) and Moriya et al. (6,787,785 B2) disclose a method of generating a mask to prevent a drop in pattern position accuracy due to the influence of internal stress of the membrane. Sanstrom et al. (6,883,158 B1) disclose a method and a system for predicting and correcting geometrical errors in lithography using masks.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikita Wells whose telephone number is (571) 272-2484. The examiner can normally be reached on 8:30 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477. The central fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

Art Unit: 2881

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Nikita Wells". The signature is fluid and cursive, with the first name "Nikita" and the last name "Wells" clearly distinguishable.

Nikita Wells, Primary Examiner
Art Unit 2881
July 18, 2005